FOR ATARI® COMPUTERS

MUSIC MAJOR

by CHARLIE PARKER

A LIGHTHEARTED APPROACH TO LEARNING THE BASICS OF MUSIC

PROGRAM EXCHANGE
EDUCATIONAL SOFTWARE inc.

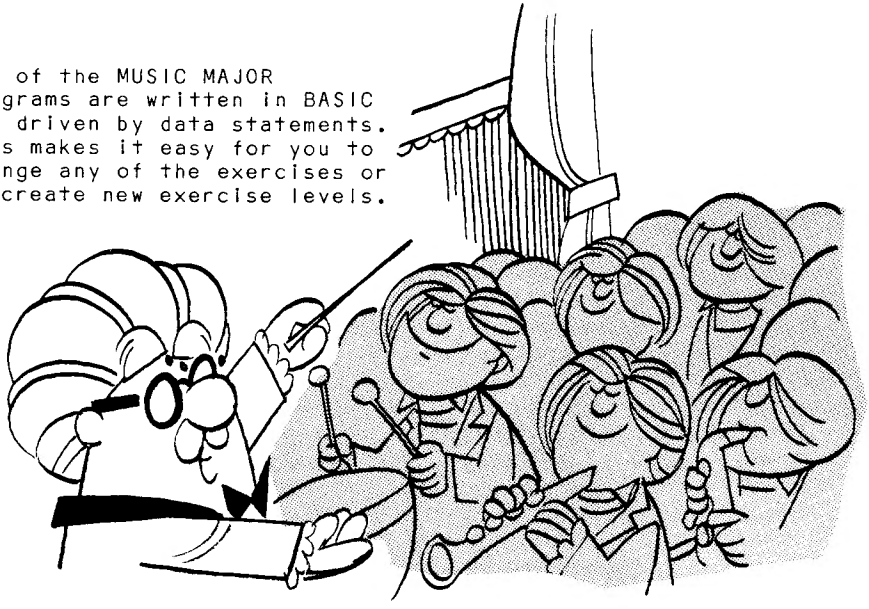
CONTENTS

INTRODUCTION

ABOUT MUSIC MAJOR

Welcome to MUSIC MAJOR. MUSIC MAJOR is a series of computer programs to help the beginning music student learn more about music. Each of the MUSIC MAJOR programs is written in BASIC and all are driven by data statements. MUSIC MAJOR comes with the following items - a Student Guide, a Quiz Making Manual and the MUSIC MAJOR programs, either on disk or on cassette tape.

All of the MUSIC MAJOR programs are written in BASIC and driven by data statements. This makes it easy for you to change any of the exercises or to create new exercise levels.



Creating new exercise levels or changing existing levels is really a very simple task. To get you started let's take an example. There are two sets of instructions below - one for the disk version and one for the tape version.

DISK VERSION

1. If the computer is not OFF then turn it off.

2. Make sure the BASIC cartridge is inserted in the left cartridge slot.

3. Turn the disk drive ON, insert the MUSIC MAJOR disk and close the disk drive door.

4. Turn the computer ON. The MUSIC MAJOR MENU will automatically load.

5. Use the SELECT key to select EXIT on the menu and press the START key. This will allow you to interface with the BASIC editor.

6. Type in LOAD "D:KEY" and press the RETURN key. This will load the KEYBOARD RECOGNITION PRACTICE program.

7. Type in the following:
```
1000 DATA KEYBOARD RECOGNITION PRACTICE TEST
1010 DATA A,B,C,X,E,END
```

8. Now type in RUN and hit the RETURN key.

9. WHAT?! It beeped at you? This is because the program verified the data statements while the title was on the screen. It found an invalid data statement and informed you of the error. The end of this manual has a complete list of all possible error messages and their meaning, although most error messages are self explanatory. Move the cursor up to the 'X' in the data statement, change it to the letter 'D', then hit RETURN.

10. Now RUN the program again.

11. If you have done everything correctly then the program should display a portion of the piano keyboard with a happy face on the 'A' key. Enter the letter 'A' and press RETURN.

12. The exercise will proceed to the B, C, D and E keys just as you specified in the data statements on line 1010.

That's all there is to creating exercise levels.

TAPE VERSION

1. Make sure the BASIC cartridge is inserted in the left cartridge slot.

2. Turn the computer ON.

3. Place the KEYBOARD RECOGNITION PRACTICE tape into the cassette player and close the cassette door.

4. Make sure that the tape is completely rewound to the beginning then press the PLAY key on the cassette player.

5. Type in CLOAD and hit RETURN.

6. When the program is loaded, then type in the following:

```
2000 DATA LEVEL TEST,2010
2010 DATA KEYBOARD RECOGNITION PRACTICE TEST
2020 DATA A,B,C,X,E,END
```

7. Now type in RUN and hit the RETURN key.

8. Use the SELECT key to select LEVEL TEST on the MUSIC TUTOR MENU then press the START key.

9. WHAT?! It beeped at you? This is because the program verified the data statements while the title was on the screen. It found an invalid data statement and informed you of the error. The end of this manual has a complete list of all possible error messages and their meaning, although most error messages are self explanatory. Move the cursor up to the 'X' in the data statement, change it to the letter 'D', then hit RETURN.

10. Now RUN the program again.

11. Select LEVEL TEST on the menu again. If you have done everything correctly then the program should display a portion if the piano keyboard with a happy face on the 'A' key. Enter the letter 'A' and press RETURN.

12. The exercise will proceed to the B, C, D and E keys just as you specified in the data statements on line 2020.

That's all there is to creating exercise levels.

TEACHING MODE

Many of the MUSIC MAJOR exercises contain a teaching mode. The easiest way to understand teaching mode is to use it. Run the KEYBOARD RECOGNITION PRACTICE program and select any level. When it asks for the name of the key then hold down the OPTION key and press the RETURN key. It should then display the words TEACHING MODE and ask you to enter the name of a key. You are now in teaching mode. To use teaching mode enter the name of the key that you want the happy face to land on. For example, enter the letters 'DS' and hit RETURN. The happy face will land on D sharp. Try a few other key names to get the feel of it. When you want to exit teaching mode just press RETURN without entering a key name. The program will then return to the same problem it was on before you entered teaching mode.

USING THE QUIZ PROGRAM

As with the other MUSIC MAJOR programs the QUIZ MASTER UTILITY program is driven by data statements. MUSIC MAJOR comes with the data statements for a quiz on Ludwig Van Beethoven. You can create your own quizzes simply by creating the data statements to drive the QUIZ MASTER UTILITY program. Here is a short example to get you started.

1. Load the program.
   For the disk version load D:QUIZMAST.
   For the tape version load the QUIZ MASTER UTILITY program.

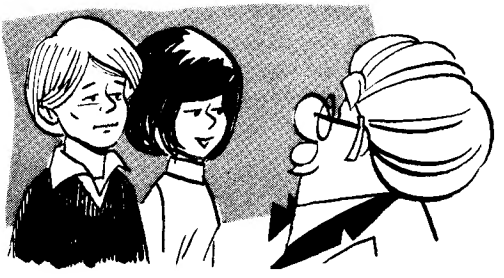
2. Type in the following:

```
1000 DATA SAMPLE QUIZ,SCREEN
1010 DATA N,,AS YOU CAN SEE,,THE QUIZ MASTER UTILITY
1020 DATA PROGRAM IS A VERY VERSATILE TOOL.
1030 DATA P,TRUE OR FALSE -,S,2,THE MUSIC MAJOR
1040 DATA QUIZ MASTER UTILITY PROGRAM IS DRIVEN BY
1050 DATA DATA STATEMENTS.,S,3,1,5,(ENTER TRUE OR FALSE)
1060 DATA Q,TRUE,THAT'S ALL THERE IS TO IT!!,END
```

3. Now run the program.

CONGRATULATIONS! You have just created your first quiz using the QUIZ MASTER UTILITY program.

Turn to the QUIZ MASTER UTILITY section of the manual for complete details.



INTRODUCTION TO MUSIC MAJOR

THE MUSIC MAJOR STUDENT GUIDE

Hello! My name is Professor Von Chip, and I want to welcome you to the Von Chip College of Music. What you are reading now is the MUSIC MAJOR STUDENT GUIDE. As its name implies it will guide you through the various musical concepts presented in MUSIC MAJOR. I will be at various places throughout the Student Guide to give you hints and to tell you when you are ready to do the exercises on the computer.

Your Student Guide introduces you to beginning level music theory and is not intended to be a replacement for a text book on music theory. Your Student Guide (when used with the computer exercises) will give you a solid foundation in musical concepts.

WHAT IS MUSIC MAJOR?

MUSIC MAJOR consists of the Student Guide and a series of computer exercises and quizzes. The purpose of the Student Guide and the exercises is to teach you more about music. Each of the MUSIC MAJOR exercises has several levels of difficulty. This way you can start with the simple concepts and progress to the more complex concepts.

RUNNING THE MUSIC MAJOR EXERCISES

Before you can use any of the MUSIC MAJOR exercises, you must first learn how to load the MUSIC MAJOR programs into the computer. This can be done in one of two ways depending on which version of MUSIC MAJOR that you have - the DISK version or the CASSETTE TAPE version.

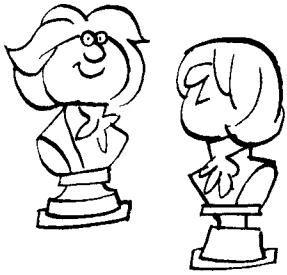
See the loading instructions in the INTRODUCTION

GETTING STARTED

Now you are ready to run your first MUSIC MAJOR program - INTRODUCTION TO MUSIC MAJOR. It will introduce you to the concepts presented in MUSIC MAJOR and teach you how to use the computer keyboard to enter your answers to the exercises. After completing the INTRODUCTION TO MUSIC MAJOR program you should -

- know the concepts presented in MUSIC MAJOR
- recognize the computer sounds that are common to the MUSIC MAJOR programs
- be able to use the computer keyboard to enter your answers
- be able to correct a typing mistake on the computer keyboard.

You are now ready to run the INTRODUCTION TO MUSIC MAJOR program. Select INTRO on the MUSIC MAJOR MENU (disk version) or run the INTRODUCTION TO MUSIC MAJOR tape. When you are finished return to this guide.



FINAL NOTES

It is important that you read your Student Guide and study the information carefully. It is NOT necessary that you complete all levels of an exercise before going to the next section in your Student Guide. For example, you may do only the first two or three levels in each section, then go back and do the more advanced levels at a later time. This way you can grasp the basic concepts of music before tackling the more complex concepts.

You have now completed the INTRODUCTION TO MUSIC MAJOR section. CONGRATULATIONS!.

KEYBOARD RECOGNITION PRACTICE

NAMING KEYS

This section is to help you learn the name of the keys on the piano keyboard. After successfully completing this section you should -

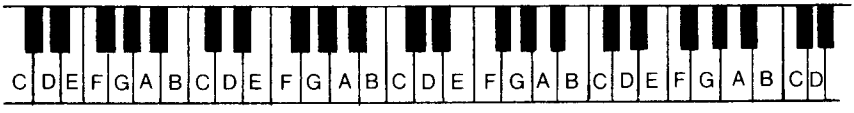
- be able to name all of the white keys on the piano
- be able to name all of the black keys by either their sharp name or their flat name
- understand the concept of whole steps and half steps

THE KEYBOARD ALPHABET

If you look at a piano keyboard you will notice that there are white keys and black keys. All of the white keys are evenly spaced and are right next to each other. The black keys are different, they are in groups - groups of two and groups of three. The way the black keys are named is different from the way the white keys are named. I will start with the white keys.

THE WHITE KEYS

Each key on the piano has a name. Their names are easy to remember because they are named after the alphabet. Also, only the letters 'A' through 'G' are used. After the letter 'G' it starts over with 'A' again and repeats 'A' through 'G'. Each group of keys - 'A' through 'G' - is called an octave. The piano contains seven of these groups or octaves. As you move from left to right on the keyboard, the tones made by the keys get HIGHER and you go UP the alphabet. As you go from right to left on the keyboard the tones get LOWER and you go BACKWARDS in the alphabet. Like this:



Tones get LOWER as you go DOWN the alphabet.

Tones get HIGHER as you go UP the alphabet.

THE WHITE KEYS (Cont.)

How do you know which key is named 'A' or 'B' or 'C' etc.? The easiest way is to find the key named 'C'. Then you can find the other keys - 'D' is to the right of 'C', 'E' to the right of 'D', and so forth. Now, how do you find 'C'? Back to the black keys for a minute. As I mentioned earlier, the black keys are grouped in groups of twos and threes. To find 'C' on the piano keyboard first locate a group of two black keys. The 'C' key is the key just to the left of the group of two black keys. Like this:

THE BLACK KEYS

As you have seen, each of the white keys has a name. But how about the black keys? The black keys are special. Each black key has TWO names. I bet you think this is going to be complicated. It's really not because each black key takes its name from the white keys next to it. So if you know the names of the white keys then you can name the black keys also. This is how it works - each black key can be either sharp or flat. The black key between the white keys 'C' and 'D' can be named either C sharp or D flat. The black key between the keys 'D' and 'E' can be named either D sharp or E flat. This same concept applies to the other black keys.

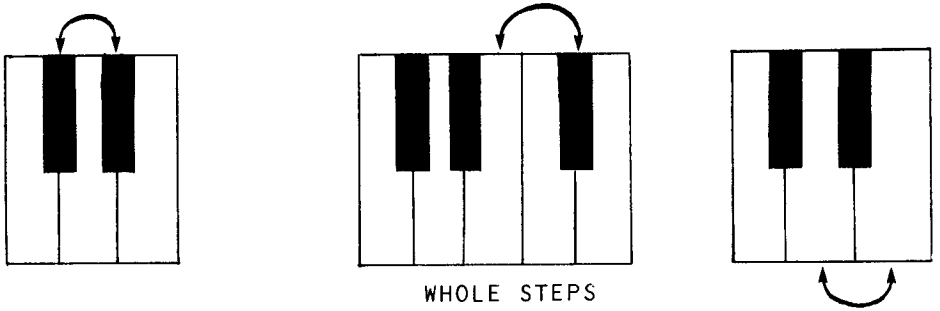
STEPS

It helps to understand the names of the keys if you understand the concept of steps. In music there are two kinds of steps - half steps and whole steps. A half step is from one key to the very next key (including the black keys). Here are some examples of half steps:

HALF STEPS

WHOLE STEPS

A whole step is two half steps, or a skip over a key. Here are some examples of whole steps:



WHOLE STEPS

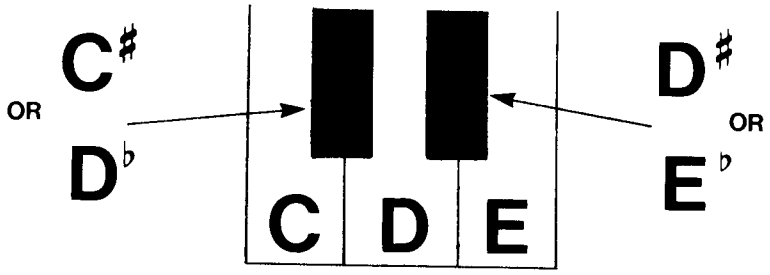
SHARPS AND FLATS

How does all of this help you name the black keys? Like this - to SHARP any key, you go a half step to the RIGHT. To FLAT any key, you go a half step to the LEFT. The sharp and flat symbols look like this:

SHARP - # FLAT - b

Since the computer does not have sharp and flat symbols you should use the letter 'S' for sharp and the letter 'F' for flat. For example, to enter F sharp on the computer you should type in 'FS'. To enter D flat you should type in 'DF'.

This is how each black key gets its two names:



NOTE RECOGNITION PRACTICE

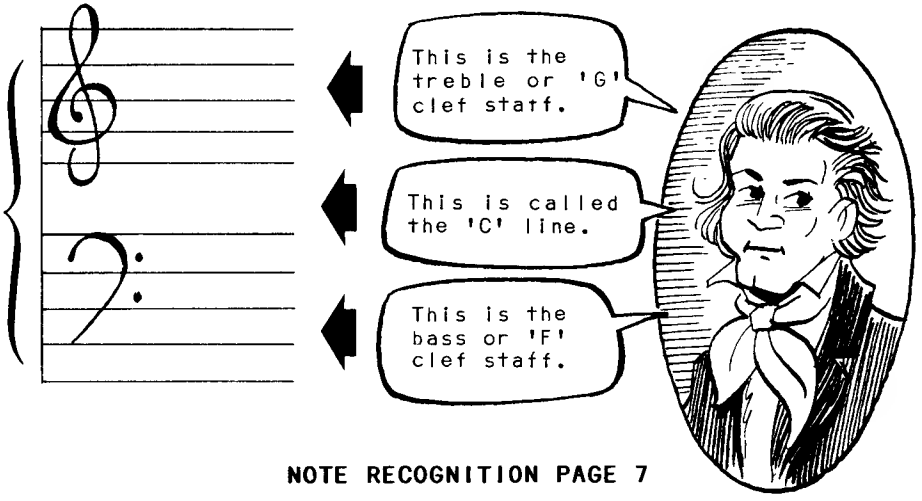
NAMING NOTES

In KEYBOARD RECOGNITION PRACTICE you learned that the keys on the piano each have a name. In this section you will learn to name the notes. After sucessfully completing this section you should -

- know what the grand staff is
- be able to name notes written in the treble clef or the bass clef
- know what ledger notes are
- understand how the ottava or octave symbol is used

THE GRAND STAFF

As you know from listening to music, the musician makes music by playing different notes or pitches. But how does the musician know which notes to play? The notes are written on a staff called the grand staff. The grand staff consists of eleven lines and notes are positioned at various places on the lines or in the spaces between the lines. Since it would be difficult to tell which line a note was on if all eleven lines were placed together, the grand staff is usually divided into two staffs. The top staff is called the treble or 'G' clef and the bottom staff is called the bass or 'F' clef. It looks like this -

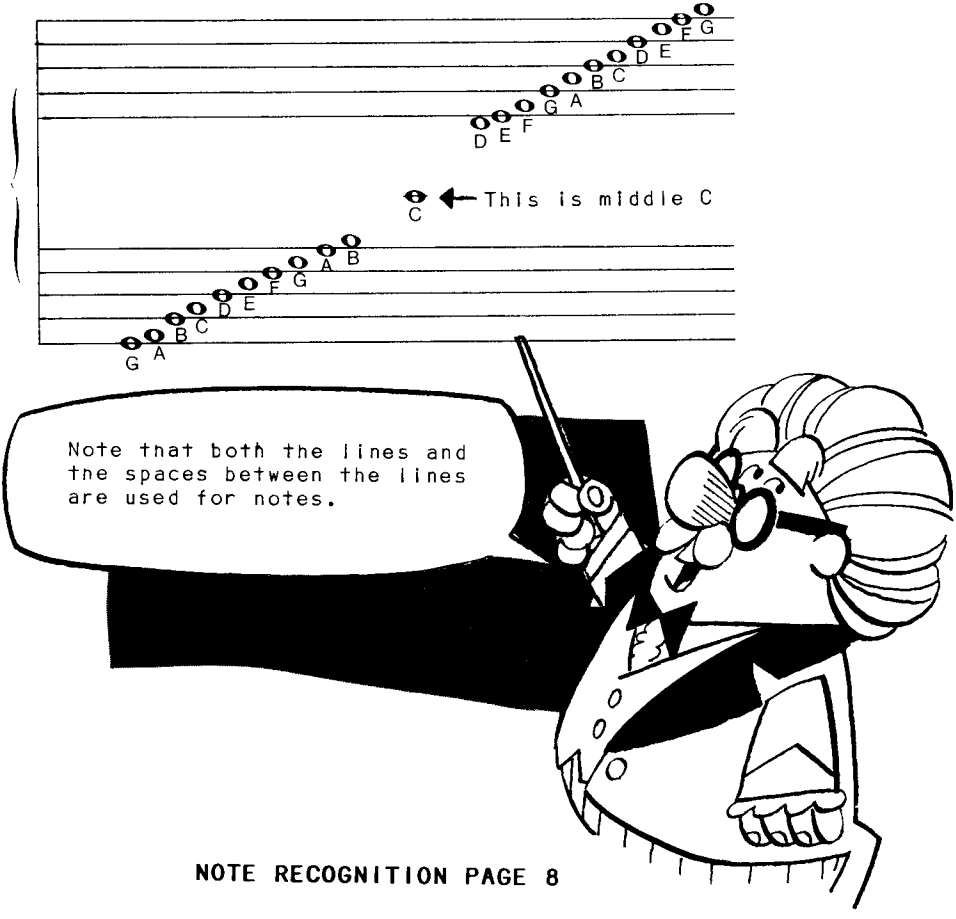


MUSIC MAJOR

There is a large space between the two clefs only to make it easier to distinguish between the treble clef and the bass clef. There is one note that fits exactly between the two clefs. That note is called 'middle' C.

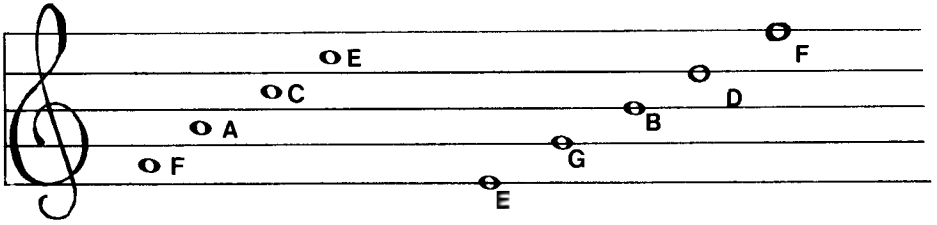
THE MUSIC ALPHABET

You should remember from KEYBOARD RECOGNITION PRACTICE that the music alphabet consists of seven letters - A, B, C, D, E, F and G and that these letters repeat over and over in groups called octaves. You should also remember that as you go higher in the alphabet the pitch or note gets higher, and as you go lower in the alphabet the note gets lower. Each of these notes or pitches has specific place in the grand staff. As you might guess, the notes get higher as you go up the staff and lower as you go down the staff. This is how it looks:



MEMORY HELPERS

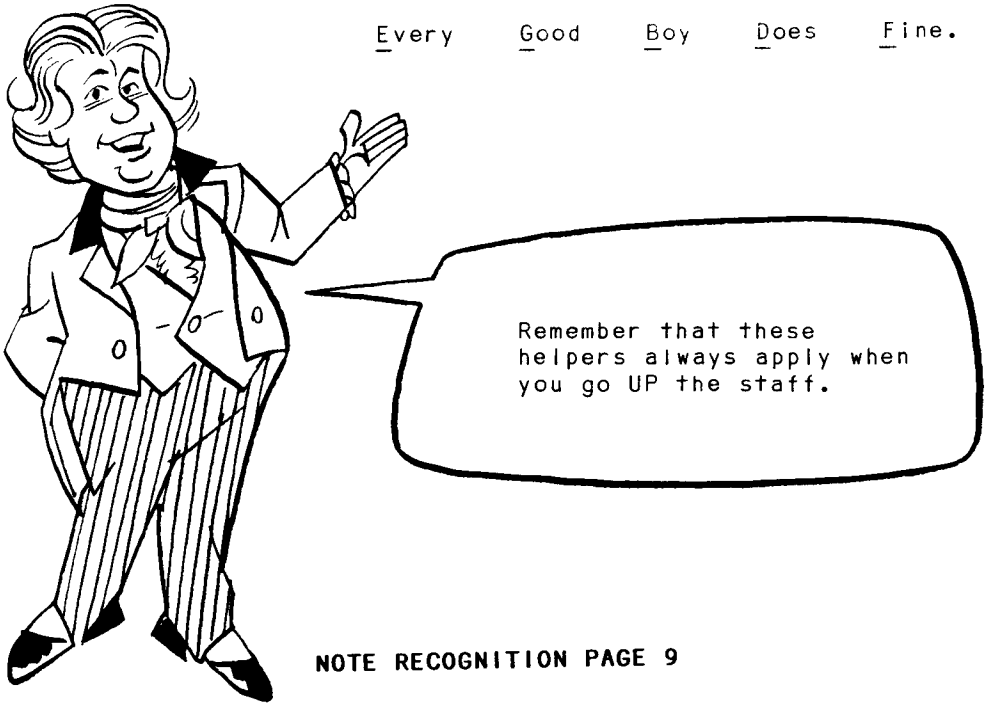
As you can see there are quite a few notes to learn. It helps to remember the names and positions of the notes if you remember words or sentences that use the names of the notes. Here are some commonly used helpers for the treble clef:



In the treble clef, the notes in the spaces between the lines spell the word FACE.

The notes on the lines don't spell a word (unless EGBDF is a word), but you can make a sentence where the first letter of each word in the sentence matches the names of the notes:

Every Good Boy Does Fine.



MEMORY HELPERS (Cont.)
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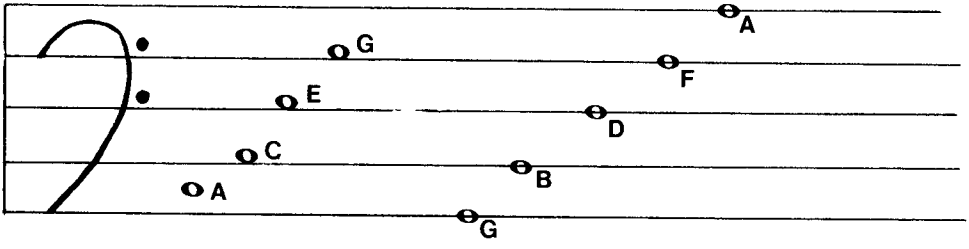
Here are some commonly used helpers for the bass clef:



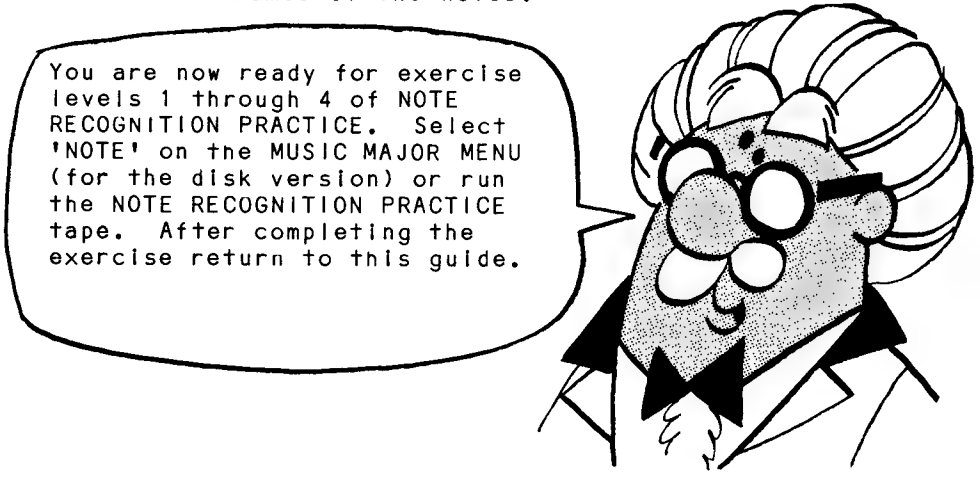
For the notes in the spaces between the lines remember this sentence:

All Cows Eat Grass

For tne notes on the lines remember this sentence:

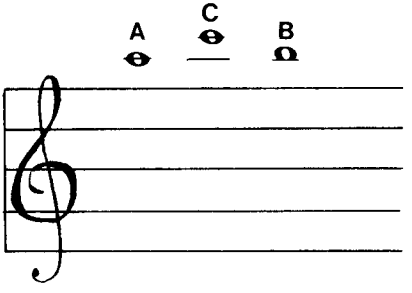
Good Boys Do Fine Always

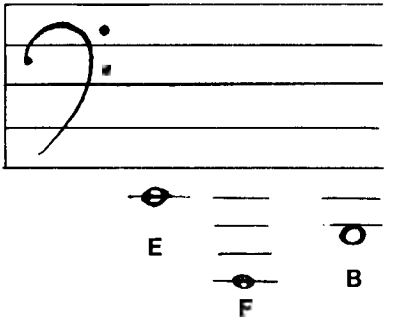
If you wish, you can make up your own sentences to help you remember the names of the notes.



LEDGER NOTES

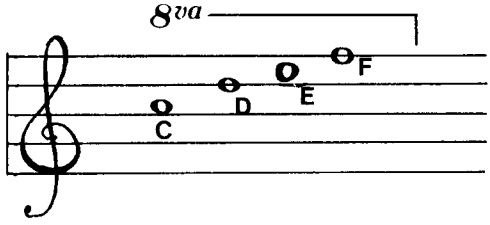
What happens if you want notes that go higher or lower than the grand staff? There are two different methods that can be used to show these notes. The most common method is to add extra lines called ledger lines. Here are two examples of notes that use ledger lines:



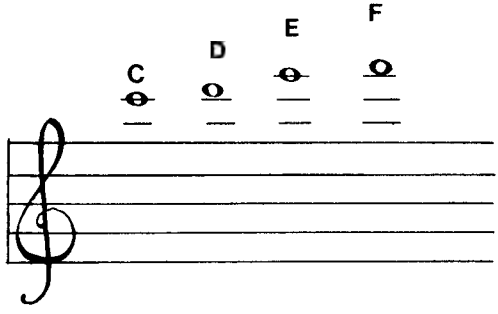


THE OCTAVE SYMBOL

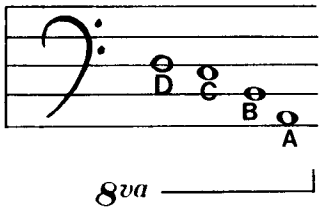
Another way of indicating notes higher or lower than the grand staff is to use the ottava or octave symbol. This is how it looks:



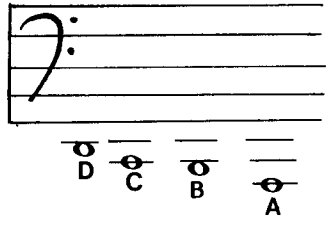
The octave symbol says that the notes are to be played eight keys or an octave higher than written. Thus, the above example has the same meaning as this:



The octave symbol makes it easier to read the music. This same idea can be applied to notes that are lower than the grand staff. When the octave symbol is placed under the notes, it indicates that you should play the notes an octave lower than written. For example:



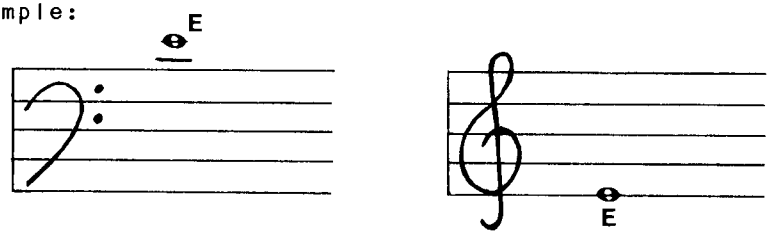
written like this



played like this

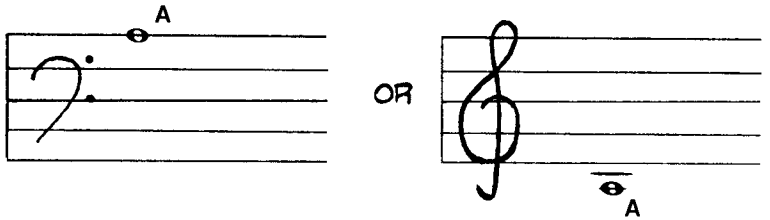
SPECIAL LEDGER NOTES

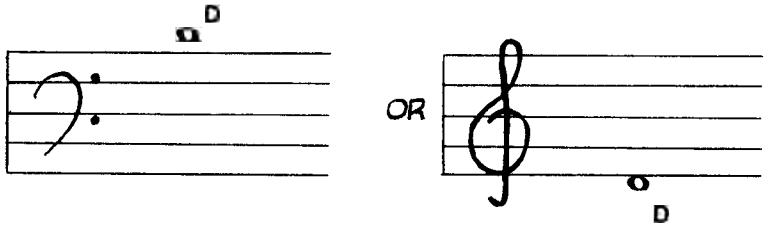
On occasion there is a need to show a note in the bass clef that is normally written in the treble clef, and the other way around - a need to show a note in the treble clef that is normally written in the bass clef. Here is an example:

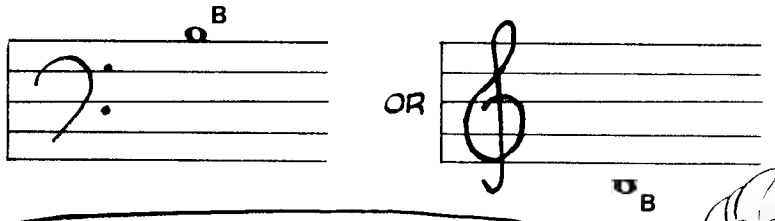


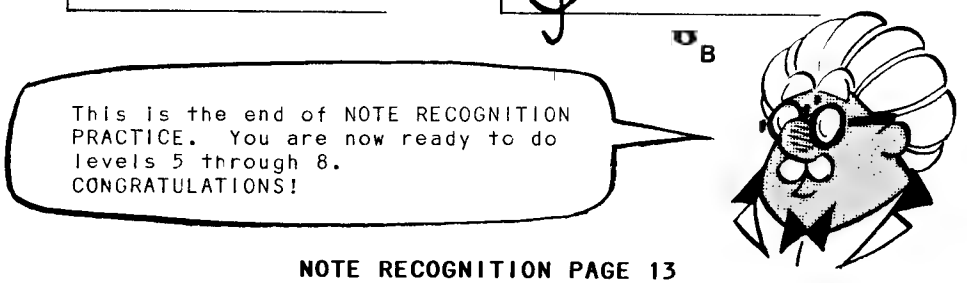
written like this is the same as this

The note (in this case 'E') is shown as it normally is written and as it would be written in the bass clef. Here are some more examples:









NOTE COUNTING PRACTICE

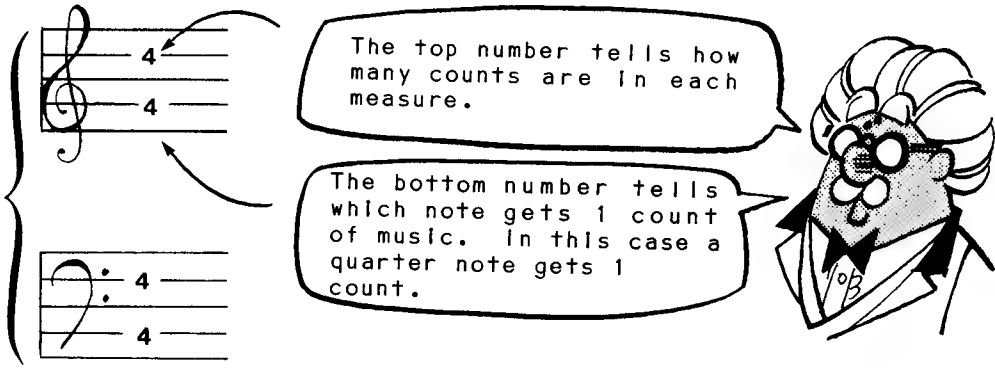
COUNTING NOTES ?

You may be wondering why I would want you to count the notes. Well, you won't be actually counting the notes, you will be counting the MUSIC. I'm sure that you have realized that when you listen to music it has a certain rhythm or beat, and that some notes are played for a longer duration than others. How does the musician know how long each note should be played? By counting - just like you will learn to do in this section. After sucessfully completing this section you should -

- be able to recognize and name the different durations of notes and rests
- know the relationship the different notes and rests have to each other
- know how to read a time signature
- be able to assign a duration (or count) to a given note or rest based on the time signature

THE TIME SIGNATURE

A time signature consists of two numbers, one on top of the other. It is always located on the left side of the first line of music, right after the clef symbol. A 4/4 time signature would look like this:



The 4/4 time signature above indicates that each measure of music has 4 counts in it (4 in the top number) and that a quarter note would get 1 count (4 in the bottom number).

THE BASIC NOTES

Each different duration of note or rest is given a name. The names correspond to its relationship to a whole note. Here are some of the basic notes:

whole note | half note | dotted half note | quarter note

In 4/4 time the whole note gets 4 counts, the half note gets 2 counts, the dotted half note gets 3 counts and the quarter note gets 1 count. I will discuss dotted notes and what the dot means later. For now just remember that the dotted half note gets 3 counts.

RESTS

Nope, that doesn't mean it's time for a nap. The rest in music is like the note in music except that it is used to indicate a duration of silence. As with notes there are different durations of rests. Here are the most commonly used rests and their corresponding notes:

whole note - 

whole rest - 

half note - 

half rest - 

dotted half note - 

dotted half rest - 

quarter note - 

quarter rest - 

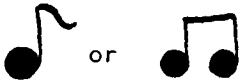
Hint: The WHOLE rest looks like a HOLE in the ground, and the HALF rest looks like a HAT.

Each rest gets the same count as its corresponding note. In 4/4 time the whole rest gets 4 counts, the half rest gets 2 counts, the dotted half rest gets 3 counts and the quarter rest gets 1 count.

You are now ready for exercise level 2 of NOTE COUNTING PRACTICE. After completing the exercise return to this guide.

OTHER NOTES

I will now introduce you to some of the other notes that are used in music. This is an eighth note:

 (two eighth notes together)

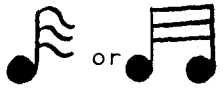
In 4/4 time the eighth note gets one-eighth of the count that a whole note would get. One-eighth of 4 is 1/2. Thus, the eighth note gets 1/2 count in 4/4 time. An eighth rest looks like this:

In 4/4 time it gets 1/2 count - just like the eighth note.

Notes of shorter and shorter duration add flags or bars (when grouped together). Here are some commonly used notes and rests, and their count (assuming 4/4 time):

eighth note 1/2 count  eighth rest 

sixteenth note 1/4 count  sixteenth rest 

thirty second note 1/8 count  thirty second rest 

You can have shorter notes by cutting in half the previous duration of the note. For example, you can have a sixty-fourth note, a one-hundred twenty-eighth note, and so forth. However, these notes are not commonly found in music for the beginning music student.

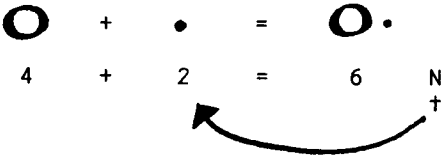
You are now ready for exercise level 3 of NOTE COUNTING PRACTICE. After completing the exercise return to this guide.

DOTTED NOTES

You've probably guessed by now that the note with the longest duration is the whole note, which in a time signature with a 4 in the bottom number (remember what that means?) receives 4 counts. This would include time signatures like 4/4, 6/4, 3/4, and so forth. As you saw earlier, adding a dot to the note causes it to have a different count than it normally would. But exactly what does the dot do? See if you can figure it out from these examples. If a note gets 4 counts, then that note dotted gets 6 counts. If a note gets 2 counts, then that note dotted gets 3 counts. A note getting 1 count would get 1 1/2 counts when dotted. Got it? By now it should be obvious that the formula is -

$$\bar{x} = A_4^+ A_4 \left[\int_0^L x d^2 \cos^2 \frac{k\pi x}{L} \, dx + \int_0^L x \sin^2 \frac{k\pi x}{L} \, dx \right]$$

Just kidding! It's actually much simpler than that. The dot after the note or rest adds half again the count of the note or rest.



4 + 2 = 6

Note that 2 is half the value of 4.

2 + 1 = 3

1 + 1/2 = 1 1/2

You can dot any of the notes or rests that you have learned so far. The rule is the same: The dot adds half again to the count of the note or rest.

OTHER TIME SIGNATURES

So far the only time signatures used have had a 4 in the bottom number. If you change the bottom number to a value other than 4 then the whole note would no longer get 4 counts and the quarter note would no longer get 1 count. GOSH! Does that mean that you have to completely re-learn everything presented so far? The answer is no. There is a basic concept that holds true no matter what the time signature is. That concept is that the relationship of the notes to one another always remains the same. For example:

This holds true no matter what the time signature is. This is how it would look if the time signature had a 4 on the bottom:

4 = 2 + 2 = 1 + 1 + 1 + 1

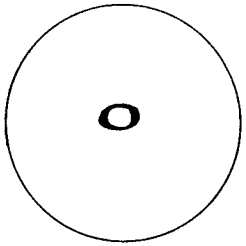
When you change the bottom number of the time signature to 8 as in 6/8 time or 3/8 time, then the eighth note gets 1 count (see note below). Thus, the quarter note gets 2 counts, the half note gets 4 counts and the whole note gets 8 counts. This is how it looks:

8 = 4 + 4 = 2 + 2 + 2 + 2

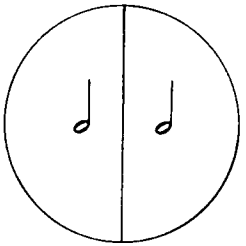
It still takes two half notes to make a whole note, four quarter notes to make a whole note, etc.

OTHER TIME SIGNATURES (Cont.)

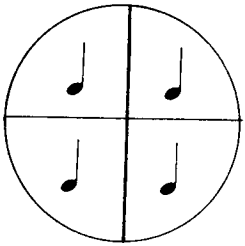
This is easier to see if you think of it in terms of a pie:



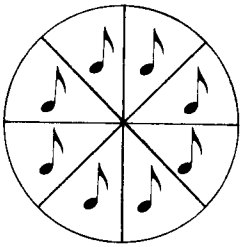
1 whole note



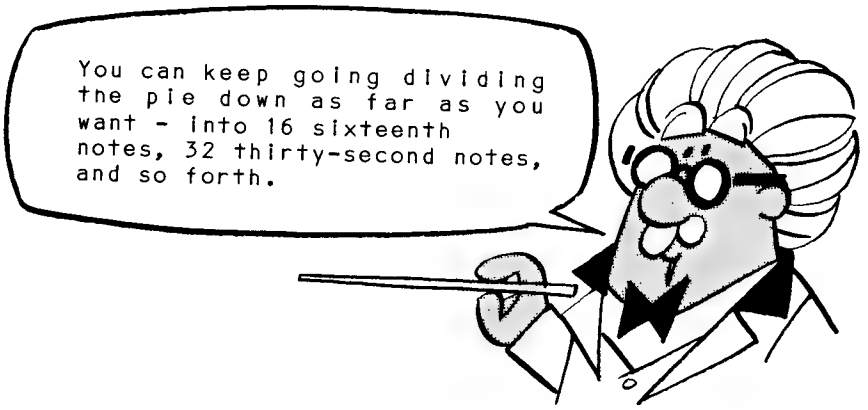
2 half notes



4 quarter notes



8 eighth notes



OTHER TIME SIGNATURES (Cont.)

Examine the following table carefully. Notice the relationship of the different notes to the time signature.

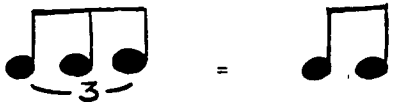
	BOTTOM NUMBER OF TIME SIGNATURE			
NOTE	2	4	8	16
dotted whole note	3	6	12	24
whole note	2	4	8	16
dotted half note	1 1/2	3	6	12
half note	1	2	4	8
dotted quarter note	3/4	1 1/2	3	6
quarter note	1/2	1	2	4
eighth note	1/4	1/2	1	2
sixteenth note	1/8	1/4	1/2	1
thirty-second note	1/16	1/8	1/4	1/2

You are now ready for exercise levels 4 and 5 of NOTE COUNTING PRACTICE. After completing the exercises return to this guide.

TRIPLETS

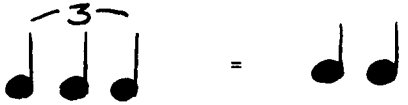
A triplet is three notes attached to each other with the entire configuration having the same value as two of the notes.

Here are some examples:

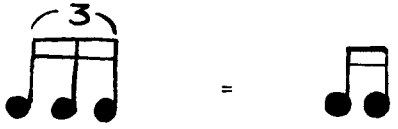


eighth note triplet = two eighth notes = 1 count in 4/4 time

The eighth note triplet is the most commonly encountered triplet. The three notes are played in the same amount of time normally allocated to two eighth notes. Here are more examples:



quarter note triplet = two quarter notes = 2 counts in 4/4 time



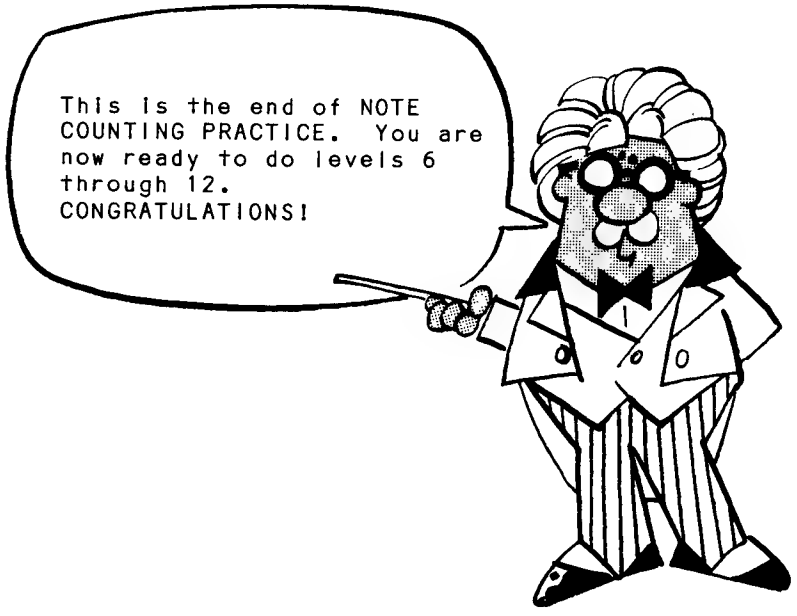
sixteenth note triplet = two sixteenth notes = 1/2 count in 4/4 time

Using the above rule it is theoretically possible to make triplets with any notes. However, triplets other than those shown above are not commonly found.

TRIPLETS (Cont.)

The following table shows the counts received by the commonly used triplets in various time signatures.

	BOTTOM NUMBER OF TIME SIGNATURE			
Triplet	2	4	8	16
quarter note triplet	1	2	4	8
eighth note triplet	1/2	1	2	4
sixteenth note triplet	1/4	1/2	1	2



MEASURE PRACTICE

MEASURING NOTES ?

In this section you won't really be measuring notes, but you will learn what the term 'measure' in music means and you will learn how to correctly assign measures to music. Before you can assign measures to music, you should know how to count music. Therefore I suggest that you complete at least exercise level 1 of NOTE COUNTING PRACTICE before attempting any of the exercise levels in this section. After successfully completing this section you should -

- be able to define the terms 'measure' and 'bar line'
- be able to assign measures to music based upon the time signature

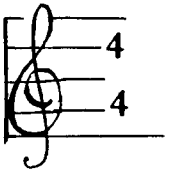
Below is a table that lists the various exercise levels of NOTE COUNTING PRACTICE and the corresponding exercise levels of MEASURE PRACTICE. Before attempting any of the exercise levels of MEASURE PRACTICE, you should have completed the corresponding exercise levels of NOTE COUNTING PRACTICE.

NOTE COUNTING PRACTICE EXERCISE LEVELS	MEASURE PRACTICE EXERCISE LEVELS
LEVEL 1	LEVEL 1
LEVEL 2	LEVEL 2
LEVEL 3	LEVEL 3,4
LEVEL 4,5	LEVEL 5
LEVEL 6,7	LEVEL 6,7
LEVEL 8,9	LEVEL 8,9
LEVEL 10	LEVEL 10
LEVEL 11,12	LEVEL 11,12

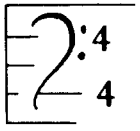
Make sure you have completed the corresponding levels of NOTE COUNTING PRACTICE before attempting the MEASURE PRACTICE exercise levels.

THE TIME SIGNATURE

If the example below looks familiar, it should. It is the same example that is in NOTE COUNTING PRACTICE. Since assigning measures to music is determined by the time signature, a review of the time signature is included here. The time signature consists of two numbers, one on top of the other. It is always located on the left side of the first line of music, right after the clef symbol. A 4/4 time signature would look like this:



The top number tells how many counts are in each measure.

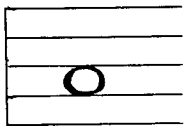


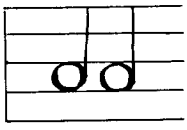
The bottom number tells which note gets 1 count of music. In this case a quarter note gets 1 count.

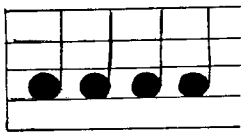
The 4/4 time signature above indicates that each measure of music has 4 counts in it (4 in the top number), and that a quarter note would get 1 count (4 in the bottom number).

MEASURES

As the word 'measure' implies, it is a way of measuring sections of music. Unlike most objects which are measured in inches or feet or kilometers, music is measured in counts or beats. You have learned that the time signature tells how many counts or beats are in each measure. Thus, the definition of a measure of music is any group of notes where the total count received by the notes is equal to the top value given in the time signature. Here are some examples of measures assuming a 4/4 time signature:

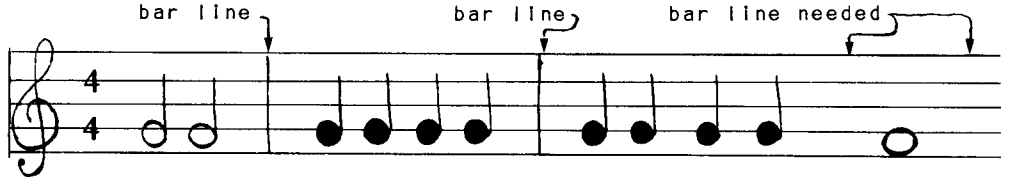


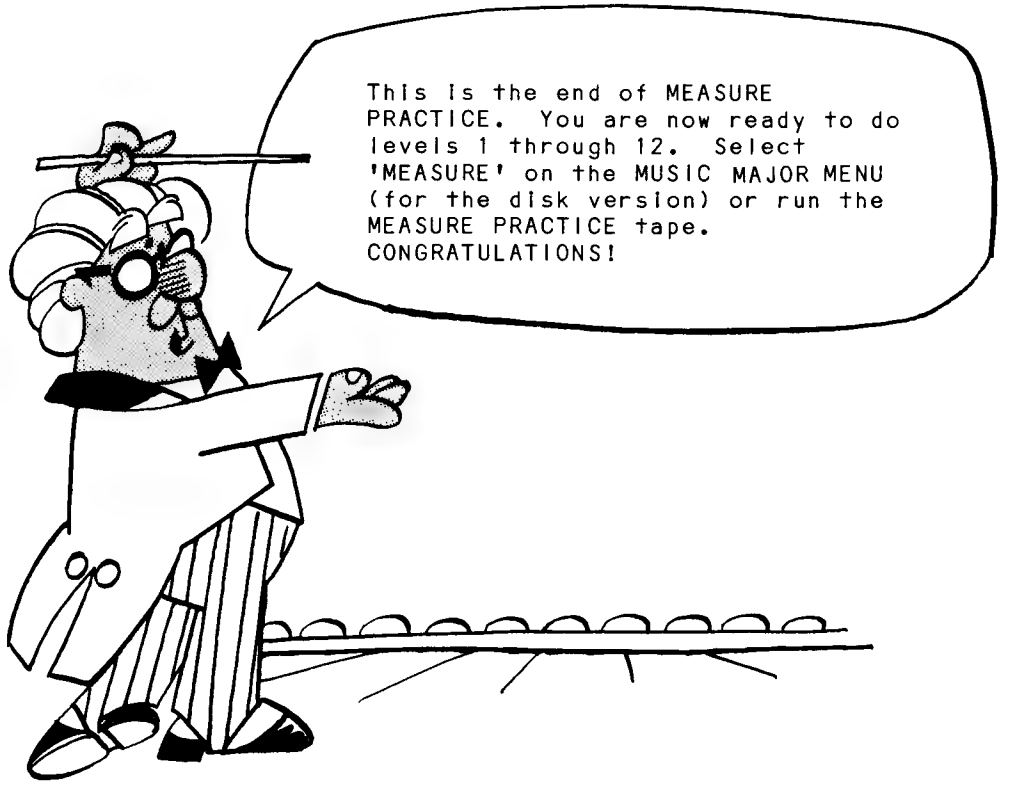




THE BAR LINE

How is each measure of music identified? With a line called a bar line. The bar line is a line that is drawn from the top line of the staff to the bottom line of the same staff. Here are some examples of correctly placed bar lines:





KEY SIGNATURE PRACTICE

KEY SIGNATURES

After successfully completing this section you should -

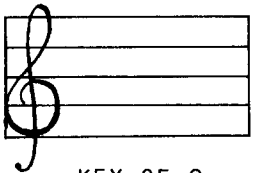
- understand what a key signature is and what it means
- be able to name and recognize the names of the major and minor key signatures

SHARPS AND FLATS

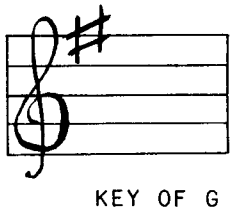
You should remember from KEYBOARD RECOGNITION PRACTICE that a note can be made sharp or flat. If you don't understand what sharps or flats are, or what whole steps and half steps are, then review KEYBOARD RECOGNITION PRACTICE before continuing with this section.

One question that you may have asked yourself is this - how do you know when to play a note as a sharp or a flat? You can tell by looking at the key signature. The key signature is a group of sharps or flats placed just after the clef symbol. Unlike the meter or time signature (which is shown only once on the first line of music), the key signature is shown on each line of music. It shows you which notes are to be played as sharps or which notes are to be played as flats. The key signature is usually shown on the treble clef and the bass clef. For simplicity, I will only use the treble clef in the exercises and here in the Student Guide.

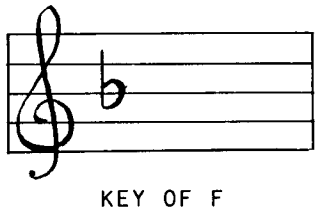
Key signatures are broken into two main modes - major mode and minor mode. Explaining the difference between the two modes is beyond the scope of this text and will not be covered. For now just remember the two modes - major and minor. Here are some common major key signatures -



KEY OF C
(no sharps or flats)



KEY OF G
(1 sharp)



KEY OF F
(1 flat)

SHARPS AND FLATS (Cont.)
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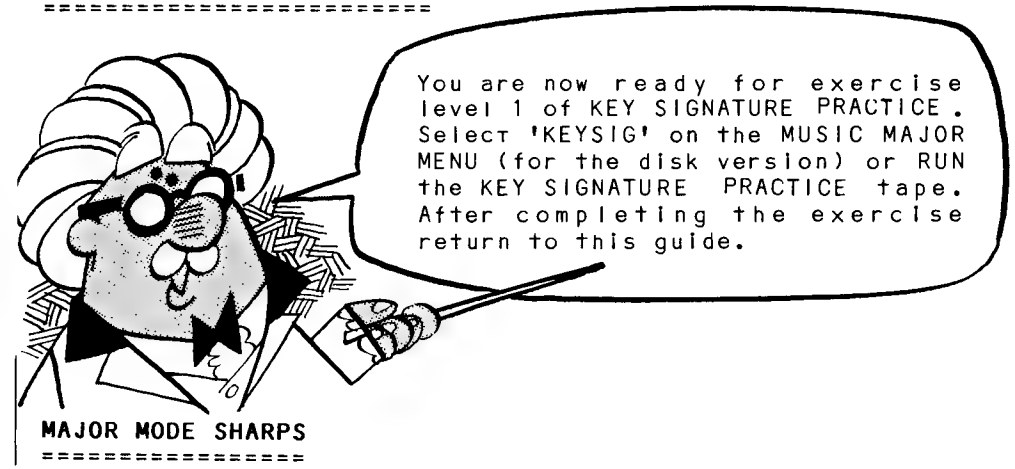
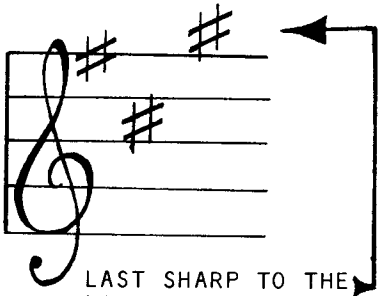


MAJOR MODE SHARPS

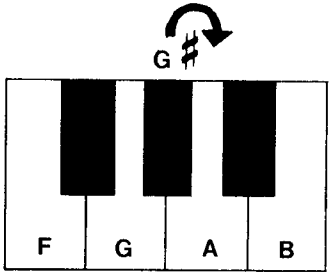
The best way to learn the various key signatures is simply to remember them. However, there are some interesting facts about the key signatures that may help you to remember them. If the key signature has sharps then you can find the name of the major key signature by remembering the following hint -

Take the last sharp to the right, find the name of the note then go UP ONE HALF STEP. This will give you the name of the key signature.

Here is an example -



LAST SHARP TO THE RIGHT IS G SHARP.



1/2 STEP UP FROM G SHARP IS A.

The last sharp to the right is G sharp. One half step UP from G sharp is A. Therefore, the name of the key signature is A major. In other words, music written in the major mode with the notes F, C and G played as sharps is said to be written in the key of A major.

MAJOR MODE SHARPS (Cont.)
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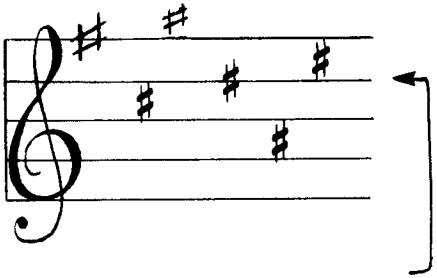
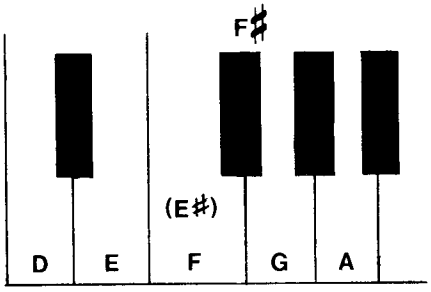
Here is another example -



LAST SHARP TO THE RIGHT IS E SHARP.



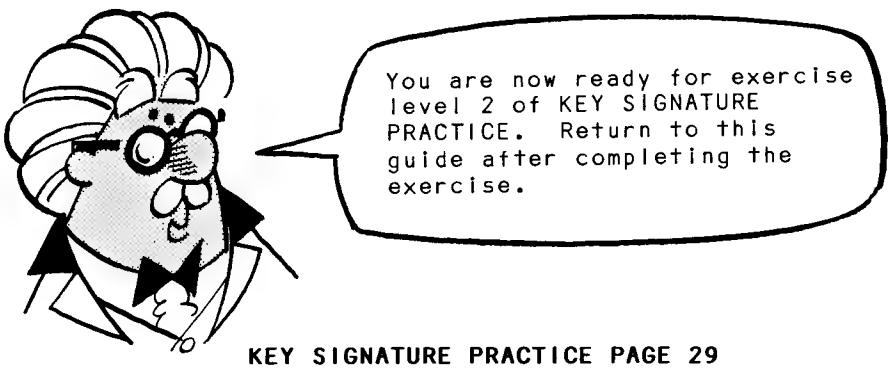
1/2 STEP UP FROM E SHARP (OR F) IS F SHARP.

Note that E sharp is the same as F. Thus, one half step up from E sharp (or F) is F sharp, giving the name of the key signature. So you could say that music written in the major mode with the notes F, C, G, D, A and E played as sharps is written in the key of F sharp major.

Did you notice something interesting about the notes listed above? The first three notes (F, C and G) are the same as the previous example where three sharps were used. This is because the sharps are always applied in the following order -

F C G D A E B

In other words, if the music was written with two sharps, then the notes played as sharps would be F and C. With four sharps the notes would be F, C, G and D, etc.

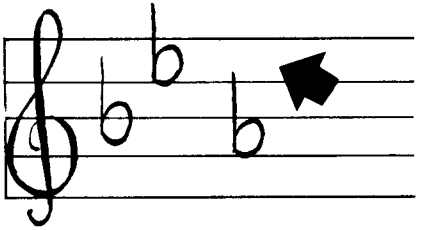


MAJOR MODE FLATS

As you know from exercise level 1, a major key signature with only one flat is called F major. But what if it contains more than one flat? As with the sharps there is a trick you can use to determine the name of the key signature. Here it is -

Take the NEXT TO THE LAST flat, find the name of the note and that is the name of the key signature.

Here is an example -



Next to the last flat is E flat, so that is the name of the key signature.

It is important to remember the 'flat' when you say the name of the key signature. So when music is written in the major mode with the notes B, E and A played as flats, it is said to be written in the key of E flat major.

Here are some interesting facts about the major key signature flats -

- If two or more flats are used then the name of the key signature always ends in the word 'flat'. (Remember - one flat is the key of F major). This makes sense if you think about the way you find the name of the key signature.

- The order that the flats are applied is -

B E A D G C F

Compare this with the order the sharps are applied. Notice something? It is exactly backwards of the way the sharps are applied.

- The key signature with no sharps or flats is named C major. With seven sharps it is C sharp major. With seven flats it is C flat major.

You are now ready for exercise level 3 of KEY SIGNATURE PRACTICE.

MINOR MODE

As with the major mode there are some interesting facts that can help you to remember the names of the minor key signatures. One interesting thing about the minor key signatures is -

- the key of 'a minor' has no sharps or flats
- the key of 'a sharp minor' has seven sharps
- the key of 'a flat minor' has seven flats

Did you notice something else? The name of the key signature was not capitalized as it was in the major key signatures. You should never see a key signature like 'F sharp minor' because the proper way to write the name of a minor key is with small letters like this 'f sharp minor'.

Another item of interest is that the sharps and flats are applied in the same order as in the major mode. That is-

SHARPS - F C G D A E B
FLATS - B E A D G C F

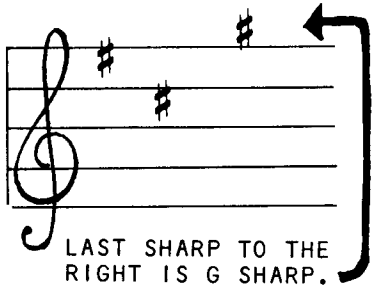
Thus there is no way to tell if the music is in the major mode or the minor mode just by looking at the key signature.

MINOR MODE SHARPS

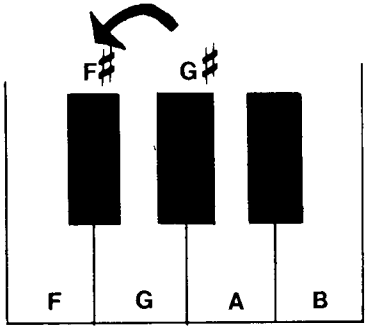
There is a memory aid to learning the names of the minor mode sharps. It is -

Take the LAST sharp to the right and go DOWN ONE WHOLE STEP. This will give you the name of the minor key signature.

Here is an example -



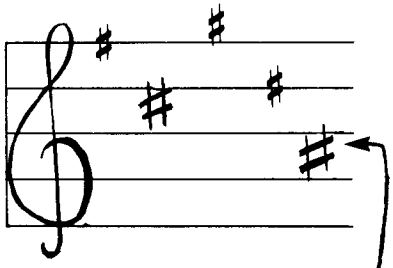
LAST SHARP TO THE RIGHT IS G SHARP.



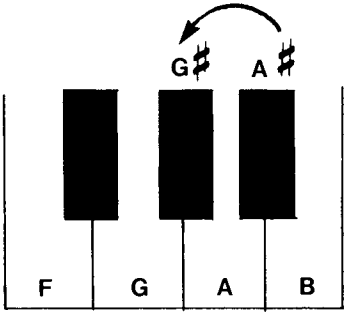
DOWN ONE WHOLE STEP GIVES F SHARP.

Thus a piece of music in the minor mode and having three sharps is said to be written in the key of f sharp minor.

Here is another example -



LAST SHARP TO THE RIGHT IS A SHARP.



DOWN ONE WHOLE STEP GIVES G SHARP.

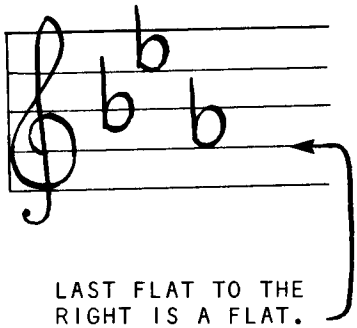
So the minor key signature with five sharps is the key of g sharp minor. Remember, it is important to put the word 'minor' after the name to indicate that it is the minor mode.

MINOR MODE FLATS

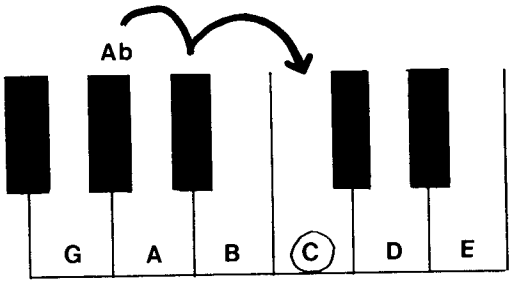
As you have probably guessed there is also a trick that you can use to find the name of the minor key signatures that have flats. Here it is -

Take the last flat to the right and go UP TWO WHOLE STEPS. This will give you the name of the minor key signature.

Here is an example -



LAST FLAT TO THE RIGHT IS A FLAT.

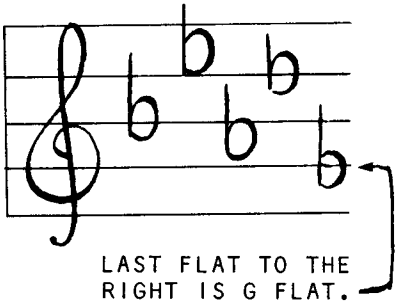


UP TWO WHOLE STEPS GIVES C.

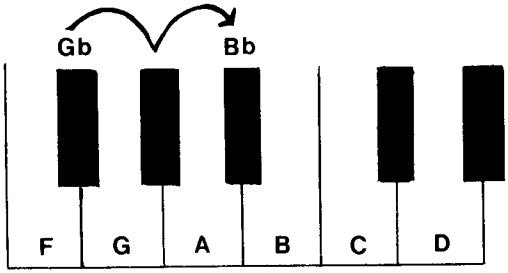
Thus the key of c minor has three flats. If you have trouble understanding why two whole steps up from A flat is C, then think of it as four HALF steps. The half steps are-

1) A flat to A.
2) A to B flat.
3) B flat to B.
4) B to C. (remember C flat is the same as B).

Here is another example -



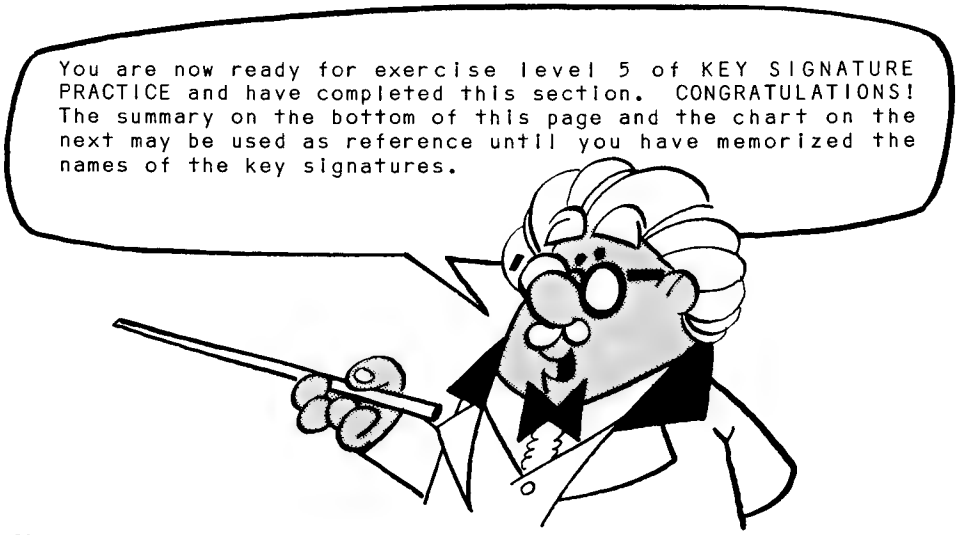
LAST FLAT TO THE RIGHT IS G FLAT.



UP TWO WHOLE STEPS GIVES B FLAT.

Thus the key of b flat minor has five flats.

MINOR MODE FLATS (Cont.)
==========



SUMMARY
=======

Remember, it is best to simply memorize the names of the key signatures. To help you remember them, here is a summary of the hints given above -

MAJOR MODE SHARPS -

Take the last sharp to the right and go UP 1/2 step.

MAJOR MODE FLATS -

The next to the last flat is the name of the key signature.

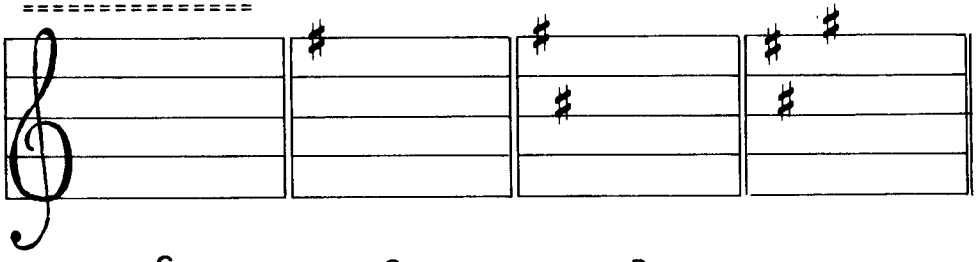
MINOR MODE SHARPS -

Take the last sharp to the right and go DOWN one whole step.

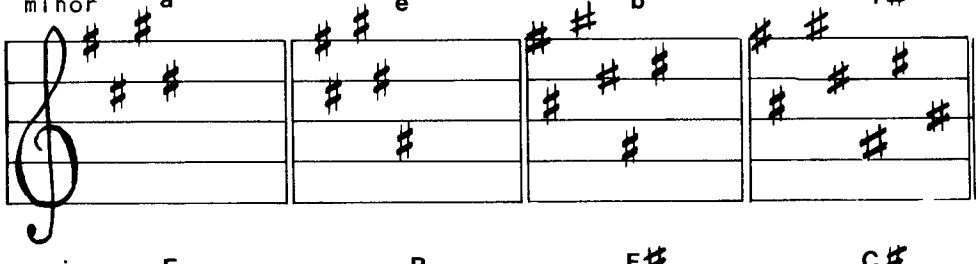
MINOR MODE FLATS -

Take the last flat to the right and go UP two whole steps.

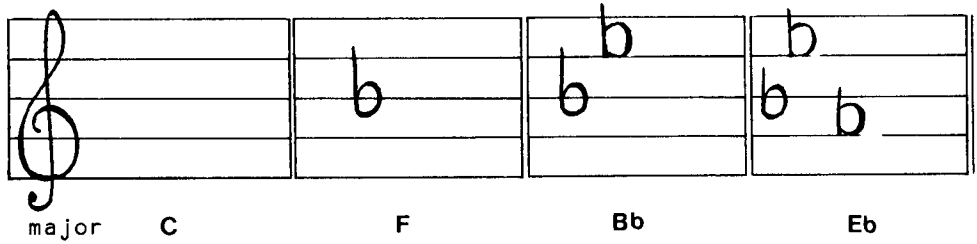
SUMMARY (Cont.)
==========



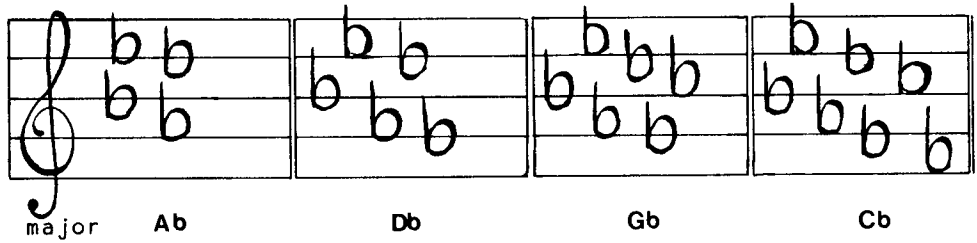
major	C	G	D	A
minor	a	e	b	f#



major	E	B	F#	C#
minor	c#	g#	d#	a#



major	C	F	Bb	Eb
minor	a	d	g	c



major	Ab	Db	Gb	Cb
minor	f	bb	eb	ab

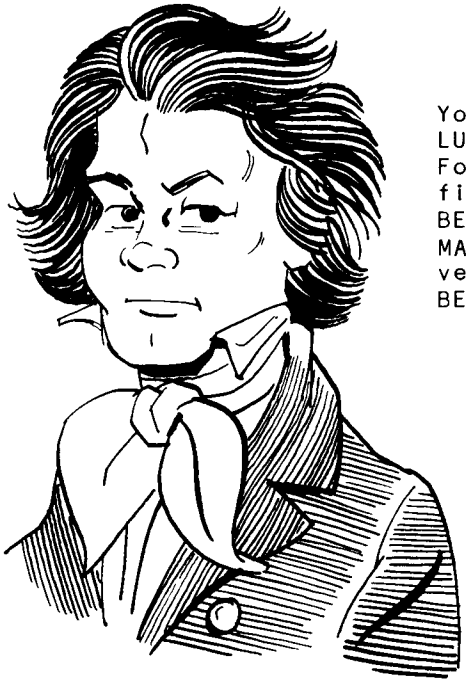
BEETHOVEN QUIZ

ABOUT THE QUIZ

The LUDWIG VAN BEETHOVEN QUIZ was developed using a MUSIC MAJOR program called the QUIZ MASTER UTILITY. The quiz tells you about Beethoven from his birth in 1770 to his death in 1827. One part of the quiz allows you to listen to the computer play the first few measures on his fifth symphony, probably his most widely known work.

After sucessfully completing the quiz you should -

- know the period of time in which he lived
- know the location of the countries in which he was born, lived, and completed his greatest works
- have an understanding of the influences that molded his life
- know the compositions for which he is most well known
- know the highlights of his life



You are now ready to do the LUDWIG VAN BEETHOVEN QUIZ. For the disk version select first QUIZMAST then BEETHOV.Q from the MUSIC MAJOR MENU. For the tape version run the LUDWIG VAN BEETHOVEN QUIZ tape.

QUIZ MASTER UTILITY

HOW TO WRITE YOUR OWN QUIZ

The QUIZ MASTER program can be used to display your own quizzes provided you follow the instructions presented in this section of the manual. Some knowledge of BASIC is required in order to use this section.

READ THIS SECTION COMPLETELY BEFORE YOU START WRITING A QUIZ

Follow instructions in your ATARI manual to make a copy of the program QUIZ MASTER. Disk users should then put all your quizzes on this disk. Tape users may want to keep each quiz on a separate tape to make the quizzes easy to use.

After creating your quiz, be sure to save it using the LIST command, since QUIZ MASTER will automatically ENTER your quiz.

For example:

DISK: LIST "D:CHOPIN.Q"

TAPE: LIST "C:"

CONCEPTS PRESENTED

The QUIZ MASTER UTILITY program allows you to develop a quiz or instructional program on any topic desired. As with the other MUSIC MAJOR programs, it is driven by data statements. The data statements can be grouped into two types. They are CONTROL COMMANDS and TEXT. The CONTROL COMMANDS tell the program to perform a specific function such as clear the screen, allow response to a question, indent the text, and so forth. See FORMAT OF DATA STATEMENTS below for a complete description of each control command.

The other type of data statement is TEXT. The text is what is displayed on the screen or printed on the printer (if the PRINT option has been selected).

MUSIC MAJOR comes with data statements for a quiz on LUDWIG VAN BEETHOVEN. The quiz is only a sample of what can be done with the QUIZ MASTER UTILITY. The INTRODUCTION TO MUSIC MAJOR program was developed using the QUIZ MASTER UTILITY program as a base.

PROCESS

1. Load the program.

For the disk version, place the MUSIC MAJOR disk in the disk drive, type in the following, then hit the RETURN key:

LOAD "D:QUIZMAST"

After the program is loaded, then use the ENTER command to enter the data statements for the desired quiz or instructional program. To enter the data statements for the quiz on LUDWIG VAN BEETHOVEN, type in the following and hit the RETURN key:

ENTER "D:BEETHOV.Q"

For the tape version there are two files. One file contains only the QUIZ MASTER UTILITY program without any data statements. Use this file to develop your own quizzes and instructional programs. The other file contains the QUIZ MASTER UTILITY program complete with data statements for the quiz on LUDWIG VAN BEETHOVEN. To load either file, place the tape in the tape player, press the PLAY key, type in CLOAD and hit the RETURN key TWICE.

2. After the program is loaded, RUN the program by typing in RUN and hitting the RETURN key.

3. What happens next depends on what option was selected. If the PRINT option was selected then the quiz will print on the printer and the program will end. You can then take the quiz on paper without using the computer.

FORMAT OF THE DATA STATEMENTS

The first data statement must begin on or after line number 1000 and must contain the title of the quiz.

```
1000 DATA CLASSICAL COMPOSERS,SCREEN
```

The next data statement is the one that determines whether the quiz will be printed on the printer or displayed on the screen. To send the quiz to the printer, the data statement must contain only the word 'PRINT' and must be in upper case letters. To send the quiz to the screen, the data statement must contain only the word 'SCREEN' and must be in upper case letters. Any value other than 'PRINT' or 'SCREEN' will result in an error.

In the above example, the title of the quiz will be displayed as:

CLASSICAL
COMPOSERS

and the quiz will be performed on the screen instead of being printed on the printer.

Following the option data statement is the actual quiz. The data statements for the quiz are made up of two types - CONTROL COMMANDS and TEXT. TEXT is the information that is to be displayed on the screen and must always have a length greater than one since text with a length of one will always be interpreted as a control command. Text may contain upper case and lower case letters as well as numbers and special characters.

1010 DATA WE WILL DISCUSS THE FOLLOWING COMPOSERS:

Since the comma (,) is used in data statements to separate data elements, then text containing a comma (where the comma is to be printed or displayed) must be entered in a special way. To use a comma as text, enter two consecutive commas (,,) in the data statement. This will cause an 'empty' data statement to be created. The QUIZ MASTER UTILITY program will interpret the empty data statement as a request to insert a comma into the text.

Any data statement with a length of one will be interpreted as a control command. Valid control commands are :

INDENT TEXT....[I]

The indent command will perform the following:
- Begin a new line of text.
- Read the next data statement to get the the number of spaces to indent.
- Insert the requested number of spaces into the beginning of the text line.

The data statement containing the number of spaces to indent must contain a numeric value or an error will occur.

1015 DATA I,5,BEETHOVEN,I,5,MOZART,I,5,AND BACH

JUSTIFY TEXT....[J]

The justify command will perform the following:
- Turn on right justify.

The justify option can be turned on or off at any time. When on, extra spaces are added to the text as needed to cause the last word in the text line to line up evenly. This avoids a 'ragged' right margin appearance. Even when the justify option is on, there are certain conditions under which the text will not be right justified. They are:

- When the text ends in a period (.), an exclamation mark (!), a question mark (?), or a colon (:).
- When more than seven spaces would have to be added to the text.
- When the text line contains only one 'word' (such as a long line of astericks).

Note that the justify command does NOT begin a new line of text.

```
1020 DATA J
```

RESET RIGHT JUSTIFY....[R]

The reset command will perform the following:
- Turn off the right justify option.

The right justify option may be turned off or on at any time. When off, no extra spaces are inserted into the text. Thus, the right margin will have a 'ragged' appearance. Note that the reset command does not begin a new line of text.

```
1035 DATA R
```

START A NEW LINE....[L]

The new line command will perform the following:
- Begin the text following the command on a new line on the printer or the screen.

This command is normally used when beginning a new paragraph of text. Note that several of the commands automatically begin a new line of text. When one of these commands is used, it is NOT necessary to use the new line command. The new line command is ignored if a new line of text has already been established. Thus, it cannot be used to skip multiple lines. Use the SKIP control command to put blank lines between text.

```
1025 DATA L,WE WILL COVER THEIR LIVES AND THEIR MUSIC
```

SKIP LINES....[S]

The skip command will perform the following:
- Begin a new line of text.
- Read the next data statement to get the number if lines to be skipped.
- Print or display the requested number of blank lines.

The data statement containing the number of lines to skip must be a numeric value or an error will occur. The skip command should be used for spacing of text on the screen. Readability of the text is improved if the text is spaced throughout the screen instead of being bunched all at the top of the screen.

```
1040 DATA S,5, LIFE WASN'T EASY FOR BEETHOVEN
```

TOP OF SCREEN....[T]

The top of screen command will perform the following:
- Print the message "HIT THE LETTER 'C' TO CONTINUE" on the bottom line of the screen.
- Wait for the letter 'C' on the computer keyboard to be pressed.
- Clear the screen, display the title of the quiz on the top line of the screen, and position the cursor on the beginning of the third line of the screen.

If the PRINT option has been selected then the QUIZ MASTER UTILITY program will print several blank lines on the printer, but will NOT wait for a response from the computer keyboard. Actually, the top of screen function is performed when ANY one position data statement is read and the command is NOT one of the control commands listed here. Thus, for example, a control command of 'B' or 'Z' will cause the top of screen function to be performed since 'B' and 'Z' are not valid control commands.

```
1045 DATA LET'S GET TO THE QUESTIONS.,T
```

INSERT NAME....[N]

The insert name command will perform the following:
- Replace the control command in the text with the name entered by the student at the beginning of the quiz.

This allows the text displayed on the screen to be customized to the student. Note that when using the PRINT option, the text printed on the printer will NOT contain the name of the student. This is because the name entry routine is bypassed when using the PRINT option.

```
1030 DATA WELL,N,THAT'S IT FOR NOW.
```

ALLOW RESPONSE TO QUESTION....[Q]

The question command will perform the following:
- Display "ANSWER..." at the bottom of the screen.
- Read the next data statement and save it as being the answer desired.
- Allow the student to enter a response to a question.
- Compare the response to the desired answer.
- If the response entered by the student matches the desired answer, then the word 'RIGHT !' is displayed and the 'right answer sound' is produced.
- If the response entered by the student does not match the desired answer then the 'wrong answer sound' is produced and the student is again allowed to enter a response.
- If the question is not answered correctly by the third try, or if the student enters a question mark (?) in response to the question, then the desired answer is displayed and the student is asked to enter it.
- Clear the screen, display the title of the quiz on the top line of the screen, and position the cursor at the beginning of the third line on the screen.

The question command should be used immediately after asking the student a question. Note that the question command implies that the text following it will begin on a new screen. Therefore it is NOT necessary to use a top of screen control command after asking a question. If the PRINT option has been selected then the word 'ANSWER...' will be printed on the printer. This allows space for the student to write in the answer to a question. The answer field has a maximum length of fifteen characters.

```
1230 DATA HOW MUCH IS 2 + 2?,Q,4
```

The text 'HOW MUCH IS 2 + 2?' will be displayed.
The QUIZ MASTER UTILITY program will read the '4' following the question control command [Q] and save it as the desired answer. Then the program will display 'ANSWER...' and wait for a response from the student. If the response is '4' then the 'right answer' sound will be produced, the screen cleared, and the title of the quiz displayed on the top line of the screen.
If the response is not '4' then the 'wrong answer' sound will be produced and the program will wait for another response from the student.

USER EXIT....[X]

The exit function will perform the following:
- Print the message "HIT THE LETTER 'C' TO CONTINUE" on the bottom line of the screen.
- Wait for the letter 'C' on the computer keyboard to be pressed.
- Read the data statement following the command to get the line number of the user exit routine.
- Issue a GOSUB to the indicated line number.

The data statement containing the line number of the user exit routine must be numeric or an error will occur. The exit function allows you to transfer program control to a special function routine. The special function routine may, for example, produce a special graphics display, make special sounds, or any other function that can be performed in BASIC. The last data statement executed by the special function routine should be RETURN. This will return program control to the QUIZ MASTER UTILITY program.

```
1020 DATA X,5000
```

This will cause a GOSUB 5000 to be issued by the QUIZ MASTER UTILITY program after displaying "HIT THE LETTER 'C' TO CONTINUE", and waiting for the letter 'C' to be pressed.

The following is an example of how the user exit control command [X] can be used to allow a student to repeat a section of the quiz or skip a section of the quiz.

```
1180 DATA This section will cover Beethoven's life.
     .
     .
     .
1510 DATA X,5000
1520 DATA This section will cover Beethoven's music.
     .
     .
     .
```

Line 1180 contains the text for the section on Beethoven's childhood. The data statements that follow line 1180 contain the text for the section.

Line 1510 is the last data statement for the section on Beethoven's childhood. It will cause the QUIZ MASTER UTILITY program to perform a GOSUB 5000.

Line 1520 contains the text for the next section of the quiz.

```
5000 PRINT "WOULD YOU LIKE TO REPEAT THE"
5010 PRINT "SECTION ON BEETHOVEN'S CHILDHOOD?"
5020 PRINT "PLEASE ENTER 'YES' OR 'NO'."
5030 INPUT G$
5040 IF G$="YES" THEN RESTORE 1180:RETURN
5050 IF G$="NO" THEN RETURN
5060 GO TO 5020
```

This is the user exit routine. The key to the routine is the RESTORE on line 5040. The RETURN after the RESTORE gives control back to the QUIZ MASTER UTILITY program. If the student replied 'yes' (on line 5030) then the restore will be done and the NEXT data statement read will be the text on line 1180, which is the beginning of the section.

The final data statement must contain the word 'END'. This tells the QUIZ MASTER UTILITY program that no more data statements are to be read, and that the student's score is to be displayed.

```
1480 DATA WELL,N,,THAT'S IT FOR NOW.,END
```

ERROR MESSAGES

Because of the potential volume of data statements associated with a quiz, the data statements are not pre-edited as they are in the MUSIC MAJOR exercises. Therefore it is possible that an error may occur during the running of a quiz.

NO TITLE FOUND

This error will occur when there are no data statements beginning on or after line number 1000. Use the ENTER command to enter the data statements required to drive the quiz, then rerun it.

TITLE TOO LONG (38 MAX)

The length of the data statement containing the title is longer than 38 characters. Shorten the title and rerun the program.

WORD IN TITLE TOO LONG (20 MAX)

One word in the data statement containing the title is longer tnan 20 characters. Pick a shorter word, rekey the title, and rerun the program.

MORE THAN 12 WORDS IN TITLE

The data statement containing the title has more than 12 words in it. This can be resolved in one of two ways. First, select a shorter title (less than 12 words), rekey the line containg the title, and rerun. Another alternative is to tie two or more words together by typing a reverse video blank between them.

OUTPUT DEVICE NOT 'PRINT' OR 'SCREEN'

The data statement immediately following the title must contain the word 'PRINT' or 'SCREEN'. This tells the QUIZ MASTER UTILITY program whether to print the quiz on the printer or to perform the quiz on the screen in an interactive mode. Place the word 'PRINT' or 'SCREEN' in the data statement immediately following the title and rerun the program.

TURN PRINTER ON. THEN RERUN.

This error does not follow the standard MUSIC MAJOR error message format since it is not the result of an invalid data statement. When this error message is displayed, then no other information (such as line number or last data statement read, etc.) is displayed. This error occurs when the PRINT option as been selected and either the printer or the interface is not powered on. Power on both the printer and the interface and rerun the program.

INVALID INDENT VALUE

The indent control command was used in a data statement, and the data statement immediately following the control command does not contain a numeric value greater than zero. When using the indent command in a data statement, make certain that the number of spaces to indent is in a data statement immediately following the control command. Correct the data statement and rerun the program.

INVALID SKIP VALUE

The skip control command was used in a data statement, and the data statement immediately following the control command does not contain a numeric value greater than zero. When using the skip command in a data statement, make certain that the number of lines to skip is in a data statement immediately following the control command. Correct the data statement and rerun the program.

INVALID USER EXIT VALUE

This can be caused by one of several things. First, the exit control command was used in a data statement, and the data statement immediately following the control command does not contain a numeric value. If the data statement does contain a numeric value, but the value does not point to a line number within the program, then this error will occur. It is also possible for this error to occur if the routine given control contains an error. Correct the cause of the error and rerun the program.

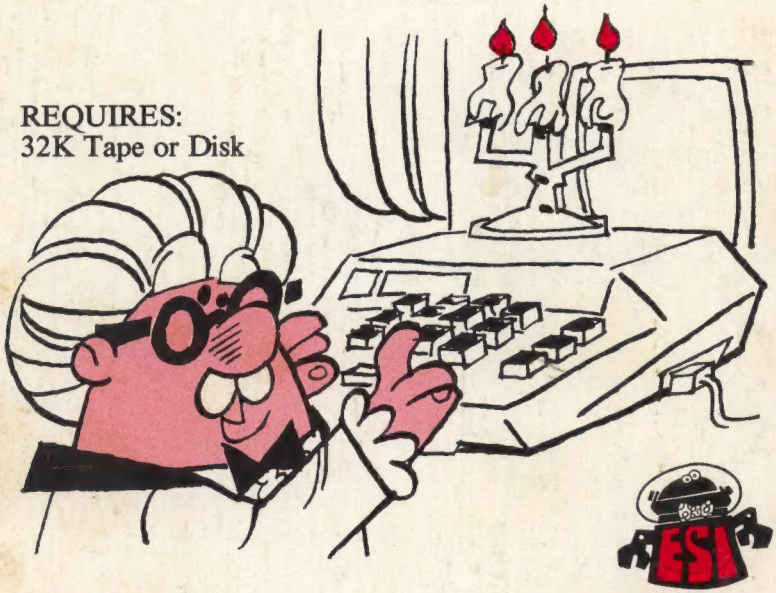
NO "END" WORD IN DATA STATEMENT

An 'out of data' condition has occurred and the last data statement does not contain the word 'END'. Add a data statement to the end of the quiz that contains only the word 'END', then rerun the program.

Learn the basics of music with this lighthearted but very thorough approach. Covering such topics as note recognition, key signatures, note counting, and much more, it is designed for use by both the individual student and music class.

This program includes a thoroughly illustrated manual and offers a QUIZ MASTER utility that allows the teacher or self-taught student to create their own A-B-C-D type tests, with a sample quiz included.

REQUIRES:
32K Tape or Disk



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